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AMENDMENTS TO THE CLAIMS:

The listing of claims shown below will replace all prior versions, and listings, of claims in the Application:

1. (Currently Amended) A method of forming MgB_2 films *in-situ* on a substrate comprising the steps:

(a) depositing boron onto a surface of the substrate in a depressurized deposition zone;

(b) moving the substrate into a reaction zone containing pressurized gaseous magnesium, the reaction zone being substantially sealed from the depressurized deposition zone;

(c) moving the substrate back into the deposition zone; and

(d) repeating steps (a)-(c).

2. (Original) The method of claim 1, wherein the movement of steps (b) and (c) is produced by rotating the substrate on a platen.

3. (Original) The method of claim 2, wherein the platen is rotated at a rate within the range of about 100 rpm to about 500 rpm.

4. (Original) The method of claim 1, wherein the substrate is heated to a temperature within the range of about 300°C to about 700°C.

5. (Original) The method according to claim 1, wherein the substrate is selected from the group consisting of LSAT, $LaAlO_3$, MgO, $SrTiO_3$, r-plane sapphire, c-plane sapphire, m-plane sapphire, yttria-stabilized zirconia (YSZ), silicon carbide, polycrystalline alumina, silicon, and stainless steel.

6. (Currently Amended) The method of claim 1, wherein the reaction zone contains gaseous magnesium at a partial pressure of about 10 mTorr. ~~A MgB_2 film produced by the method of claim 1~~.

7. (Original) The method according to claim 1, wherein the reaction zone is coupled to a heated source of magnesium.

8. (Original) The method according to claim 1, wherein the substrate is a wafer.

9. (Original) The method according to claim 1, wherein the substrate is a tape.

10. (Original) The method according to claim 1, wherein the method is used to form MgB_2 on a plurality of substrates.

11. (Currently Amended) The method of claim 1, wherein the boron is evaporated ~~the film of MgB_2 is generated under~~ at a pressure of less than 10^{-6} Torr in the

deposition zone.

12. (Original) The method of claim 1, wherein the MgB_2 film is formed on a single side of the substrate.

13. (Currently Amended) A method of forming MgB_2 films *in-situ* on a substrate comprising the steps:

(a) depositing boron onto a surface of the substrate in a deposition zone;

(b) moving the substrate into a reaction zone containing pressurized gaseous magnesium;

(c) moving the substrate back into the deposition zone; and

(d) repeating steps (a)-(c);

~~The method of claim 1,~~ wherein the MgB_2 film is formed on two sides of the substrate.

14. (Currently Amended) A method of forming a film of MgB_2 *in-situ* comprising the steps of:

providing a rotatable platen, the platen being rotatable within a housing having a pressurized reaction zone and a separate depressurized deposition zone, the pressurized reaction zone being substantially sealed from the depressurized deposition zone;

providing an evaporation cell operatively coupled to the pressurized reaction zone, the evaporation cell containing magnesium;

providing a source of boron disposed adjacent to the depressurized deposition zone;

providing an electron beam gun aimed at the source of boron;

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loading a substrate onto the platen;

rotating the platen;

heating the local environment around the substrate;

heating the evaporation cell so as to produce pressurized gaseous magnesium in the reaction zone; and

evaporating the boron with the electron beam gun.

15. (Original) The method according to claim 14, wherein the local environment around the substrate is heated to a temperature within the range of about 300°C to about 700°C.

16. (Original) The method according to claim 14, wherein the evaporation cell is heated to a temperature of at least 550°C.

17. (Original) The method according to claim 14, wherein the platen is rotated at a rate within the range of about 100 rpm to about 500 rpm.

18. (Original) The method according to claim 14, wherein the substrate is selected from the group consisting of LSAT, $LaAlO_3$, MgO, $SrTiO_3$, r-plane sapphire, c-plane sapphire, m-plane sapphire, yttria-stabilized zirconia (YSZ), silicon carbide, polycrystalline alumina, silicon, and stainless steel.

19. (Original) The method of claim 14, wherein the substrate is a wafer.

20. (Original) The method of claim 14, wherein the substrate is a tape.

21. (Original) The method of claim 14, wherein the step of loading the platen comprises loading the platen with a plurality of substrates.

22. (Currently Amended) The method of claim 14, wherein the boron is evaporated ~~the film of MgB_2 is generated under~~ at a pressure of less than 10^{-6} Torr in the deposition zone.

23. (Original) The method of claim 14, wherein a film of MgB_2 is formed on a single side of the substrate.

24. (Currently Amended) A method of forming a film of MgB_2 *in-situ* comprising the steps of:

providing a rotatable platen, the platen being rotatable within a housing having a reaction zone and a separate deposition zone;

providing an evaporation cell operatively coupled to the reaction zone, the evaporation cell containing magnesium;

providing a source of boron disposed adjacent to the deposition zone;

providing an electron beam gun aimed at the source of boron;

loading a substrate onto the platen;

rotating the platen;

heating the local environment around the substrate;

heating the evaporation cell so as to produce gaseous magnesium in the reaction zone; ~~and~~

evaporating the boron with the electron beam gun;

~~The method of claim 14, further comprising the steps of~~ removing the substrate from the platen;

turning the substrate over;

loading the substrate onto the platen;

rotating the platen;

heating the local environment around the substrate;

heating the evaporation cell so as to produce pressurized gaseous magnesium in the reaction zone; and

evaporating the boron with the electron beam gun.

~~25~~. (Currently Amended) The method of claim 14, wherein the reaction zone contains gaseous magnesium at a partial pressure of about 10 mTorr. ~~A MgB_2 film produced by the method of claim 14.~~

~~26~~. (Currently Amended) A method of forming a superconducting film of a known superconducting compound *in-situ* on a substrate comprising the steps:

(a) depositing one or more elements of the superconductor onto a surface of the substrate in a depressurized deposition zone having a pressure less than about 10^{-5} Torr;

(b) heating a non-gaseous element of the superconductor so as to produce a

pressurized gaseous phase of the element inside a reaction zone, the reaction zone being substantially sealed from the depressurized deposition zone and being substantially free of oxygen;

(c) moving the substrate into the reaction zone containing the pressurized gaseous element;

(d) moving the substrate back into the depressurized deposition zone; and

(e) repeating steps (a)-(d).

27. (Currently Amended) The method of claim 26, wherein the superconducting film is ~~a superconductor selected from the group consisting of~~ magnesium diboride~~, YBCO, BSCCO, TBCCO, and HBCCO~~.

28. (Currently Amended) A method of forming a film of a known compound *in-situ* on a substrate comprising the steps:

(a) depositing one or more elements of the compound onto a surface of the substrate in ~~a~~ one of a plurality of depressurized deposition zones;

(b) heating a non-gaseous element of the compound so as to produce a pressurized gaseous phase of the element inside a plurality of reaction zones, each reaction zone being substantially sealed from the depressurized deposition zones;

(c) moving the substrate into a next ~~the~~ reaction zone containing the pressurized gaseous element;

(d) moving the substrate ~~back~~ into ~~the~~ a next depressurized deposition zone; and

(e) repeating steps (a)-(d).

28. (Original) The method of claim 28, wherein the compound is a superconductor.

30. (New) The method of claim 26, wherein step (c) further comprises moving the substrate into another reaction zone containing oxygen.

31. (New) The method of claim 30, wherein the superconducting film is a superconductor selected from the group consisting of YBCO, BSCCO, TBCCO, and HBCCO.